# shaft liner

## Gypsum Board Enclosure System

Georgia-Pacific

GYPSUM DIVISION

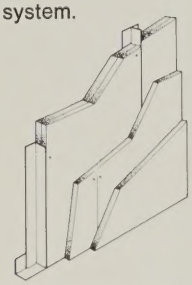
# shaft liner™

## Gypsum Board Enclosure System

## Descriptions

Georgia-Pacific Shaft Liner is a solid gypsum board partition for enclosing elevator shafts, stairs, smoke towers and other such shafts. It is a non-load bearing wall, designed for resistance to uniform wind loads without excess deflection. Important advantages of the system are:

1. Much lighter weight than masonry,
2. Non-combustible and economical,
3. Can be completely erected from one side,
4. Practically eliminates the need for scaffolding,
5. Panels can be individually removed for backside maintenance,
6. Minimum clean-up.
7. Non-progressive system.



2 HOUR SHAFT WALL PARTITION

The partition consists of a basic pre-laminated panel 1⅝″ thick by 24″ wide, which fits into a top metal "J" track and bottom "L" runner. Metal "T" splines are inserted between each panel. The panels are subsequently secured to the "T" splines, and top and bottom runners. Installation of the facing layers and surface finishing can be accomplished later to coincide with interior partitions.

This system meets the ATSM E119 requirements for 1 & 2 Hour Fire Resistive Classifications. It is also designed and tested to meet a variety of wind loads at various heights. The standard gauge of the metal components is 20 gauge. However, other than the 20 gauge may be used, as shown in the table on the following page for various wall heights, deflections and wind loads.

The facing generally consists of 2 layers of ½″ or ⅝″ G-P gypsum board. The exposed layer may be Dens-Cote Base and Dens-Cote Veneer Plaster, or G-P Tile Backer.

**G-P Shaft Liner System has passed the following fire tests:**

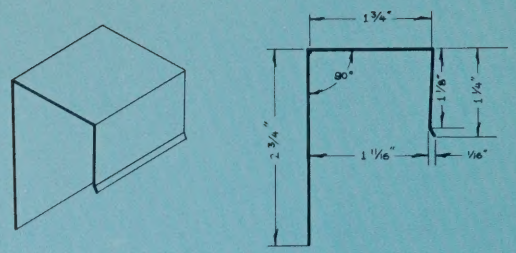
1½ Hour System—Ohio State Univ. T-4982
2 Hour System—Ohio State Univ. T-4958
2 Hour Chase Wall—Ohio State Univ. T-4991
2 Hour Alternate Wall Underwriters Lab. Design 42—2 Hr. (U503)

Components of the Georgia-Pacific Shaft Liner conform to the following specifications:

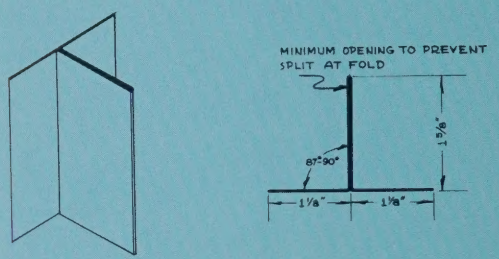
| | |
|---|---|
| Wallboard, ½″ and ⅝″ | ASTM C 36 |
| Wallboard, 1″ | ASTM C442 |
| Dens-Cote Base, ½″ and ⅝″ | ASTM C588 |
| Dens-Cote Veneer Plaster | ASTM C587 |
| Tile Backer | ASTM C630 |
| Metal for Components | ASTM C446 |

## Metal Components

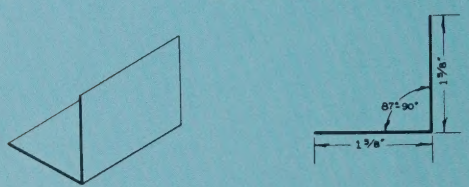
### "J" Track




### "T" Spline




### Angle Runner




## Installation

**Basic 2 Hour System (T-4958)**

Install the perimeter framing first which consists of the top metal "J" and bottom "L" tracks. These components are to be secured with power driven fasteners, or equivalent, at 24″ maximum centers. The 1⅝″ Shaft Liner panels are inserted top first into the "J" track and pushed flush against the bottom angle runner. These panels are separated by the "T" splines, which are positioned so the flat, or flange, side faces the shaft. Type S-12 drill point screws 2″-2⅜″ long are used, 24″ o.c., to fasten the panel to the "T" splines. At the extreme top and bottom, screw the core to the runners, at points 2″ on each side of the spline, using the drill point screws. Screws will protrude slightly on the unfinished shaft side.

Two layers of ½″ Georgia-Pacific Regular Wallboard, 4 ft. wide by partition height are applied to the face side. Each is installed parallel to the Shaft Liner panels. The first layer is offset from the "T" spline by 12″, and the second layer staggered 24″ from the first. Installation is by ⅜″ beads of adhesive, or full lamination. For improved sound isolation, adhesive should fill the joints at each "T" spline. The facing sheets are also secured with 1⅝″ Type G screws spaced 24″ o.c. at edges and center (1st layer) and 16″ o.c. at edges and center (2nd layer). Finish joints and screw heads in normal manner in preparation for the final decoration. Caulk around perimeter of panel.

**Alternate 2 Hour System U503 (UL 42-2 Hour)**

The "L", "J" and "T" metal components and the 1⅝" core unit are erected in the same manner as the basic system. Angle runner with 1½" flat metal strip may be substituted for "J" track. To splice panels, use 2' section of "T" spline at all horizontal butt joints. Stagger butt joints min. of 24". Two layers of ½" (or ⅝" for greater heights) G-P Firestop wallboard 4' wide by wall height are then applied to face side. Use adhesive (or laminating joint compound) and screws as described in the basic system. Use 1⅝" type S screws at extreme top and bottom. See page 8 for details.

**2 Hour Chase Wall (T-4991)**

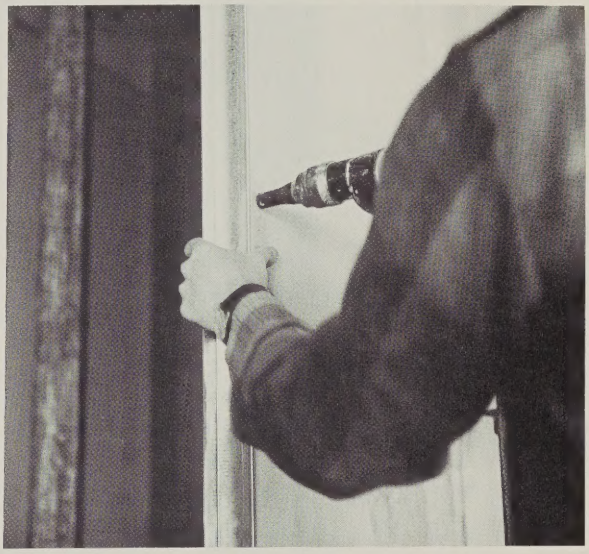
After erecting metal components and 1⅝" core unit, install G-P "L" angle runner horizontally on 40" centers through core unit to "T" spline. Erect 2½", 25 gauge steel studs and track 3" from core unit. Brace studs with angle runner. Apply one layer of ⅝" Firestop® to studs. See page 8 for details.

**1½ Hour Wall (T-4982)**

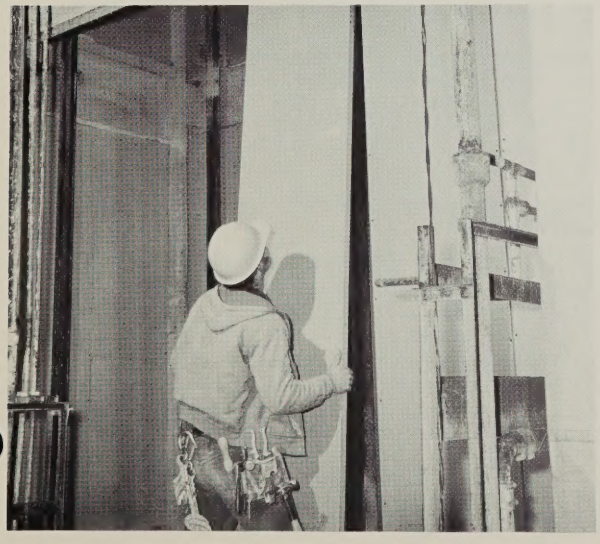
The "L", "J" and "T" components and the 1⅝" core unit are erected in the same manner as in the basic 2 Hour system. The one layer of ⅝" G-P Firestop® is screw-laminated to the core unit using "G" screws 16" o.c. Offset joints from "T" splines by 12".

The Georgia-Pacific Shaft Liner System is designed for versatile performance. Ease of construction from one side makes this wall ideal for use in locations other than vertical openings (such as stairwells). The system takes much less space than masonry or stud walls. Both sides can be finished by adding a layer of regular board over the "T" flanges on the back side. However, if the back side is to be finished, the wallboard should be applied first before screw attaching the Shaft Liner panels to the metal components.

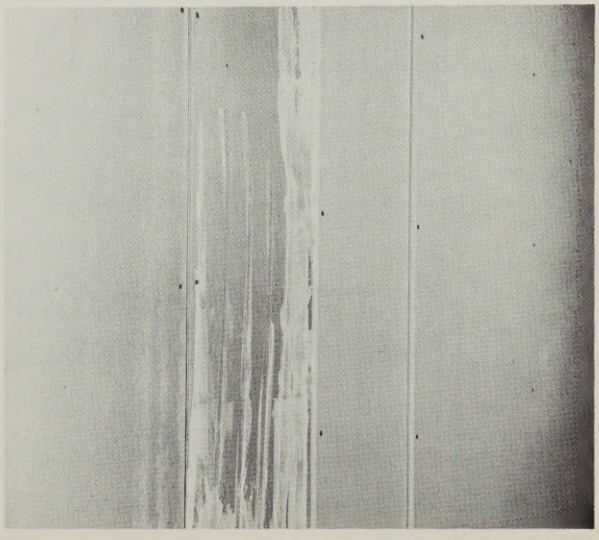
1. INSTALLING FLOOR TRACK.



3. ATTACHING CORE TO T-SPLINE.



2. INSTALLING CORE PANEL.



4. APPLYING FINISH LAYERS.

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**LIMITING HEIGHT SELECTION TABLE***

| System | Vertical "T" Spline Gauge | Deflection | HEIGHT BASED ON POUNDS PER SQUARE FOOT | | | | |
|---|---|---|---|---|---|---|---|
| | | | 5# | 7.5# | 10# | 12.5# | 15# |
| **1½ Hour Wall** T-4982 | 22 | L/120 | 10′ | 10′ | 9′ | 9′ | — |
| | | L/240 | 9′ | 8′ | — | — | — |
| | 20 | L/120 | 14′ 4″ | 12′ 10″ | 11′ 4″ | 10′ 7″ | 9′ 10″ |
| | | L/240 | 11′ 4″ | 10′ 1″ | 9′ | 8′ 1″ | 7′ 10″ |
| **2 Hour Wall** T-4958 and UL43-2 Hr. (U504) | 22 | L/120 | 10′ | 10′ | 10′ | 10′ | 9′ |
| | | L/240 | 10′ | 10′ | 9′ | 8′ | — |
| | 20 | L/120 | 17′ | 15′ 4″ | 13′ 8″ | 12′ 10″ | 12′ |
| | | L/240 | 13′ 9″ | 12′ 3″ | 10′ 11″ | 9′ 7″ | 8′ 6″ |
| | 18 | L/240 | 14′ | 12′ 6″ | 11′ | 9′ 6″ | 8′ 6″ |
| | 16 | L/240 | 15′ | 13′ | 12′ | 10′ | 9′ |
| | 14 | L/240 | 16′ | 14′ | 12′ 6″ | 11′ | 10′ |
| **2 Hour Chase Wall** T-4991 | 16 ga. 3⅝″ Steel Stud | L/120 | 23′ | 20′ 7″ | 18′ 3″ | 17′ 1″ | 15′ 11″ |
| | 25 ga. 2½″ Steel Stud | L/240 | 14′ | 12′ | 10′ | 8′ | — |
| | 16 ga. 3⅝″ Steel Stud | | 18′ 3″ | 16′ 4″ | 14′ 6″ | 13′ 7″ | 12′ 8″ |
| **2 Hour Alternate Wall** (with ⅝″ Firestop facing layers) UL42-2 Hr. (U503) | 22 | L/120 | 10′ | 10′ | 10′ | 10′ | 10′ |
| | | L/240 | 10′ | 10′ | 9′ | 8′ | — |
| | 20 | L/120 | 19′ | 17′ 6″ | 15′ | 14′ | 13′ 2″ |
| | | L/240 | 15′ 1″ | 13′ 6″ | 11′ 11″ | 11′ 2″ | 10′ 5″ |

NOTE: 22 ga. "T" splines should not be used over 10′ 0″

*Height selection table based on tests by Wiss, Janney, Elstner & Associates

## General Working Conditions

During cold weather, temperatures in the building should be maintained at not less than 50°F during application of adhesives or joint treatment. There should be adequate ventilation to dispose of excessive moisture during these periods.

For steel frame construction, installation of top "J" track should be completed before application of any spray-on fireproofing.

The poured concrete floor should be reasonably smooth in the area where the track is to be installed. If the track is installed close to the edge, the concrete may spall unless a fastening plate is set into the concrete to which the track can then be applied.

The "T" spline and Shaft Liner panels should be no shorter than ¾″ less than height of the shaft opening.

The "J" track is provided to eliminate top fastening of panels during initial placement. Working conditions and contractor preference may speed installation by substituting an angle at the top.

Equivalent performance is anticipated provided the angle is formed with 20 ga. having a top leg 1⅝″ wide and back leg 2¾″ deep. Panels are initially attached with one screw at the center both top and bottom. This is followed by attachment of a 1½″ flat 22 ga. strip secured with 2⅜″ screws 2″ either side of the "T" spline. Local jurisdictions must be consulted for approval.

## Limitations

1. Georgia-Pacific Shaft Liner walls are non-load bearing.
2. Do not use in areas of unusually high moisture conditions.
3. *Electrical or mechanical piping, wiring, etc. should not be incorporated unless furred construction is used.
4. Adhere to gauges and heights shown in table.
5. Provide control joints at maximum 30 ft. intervals.
6. When hand rails or other heavy items are anchored to the Shaft Liner System, install 22 gauge metal strip between the Shaft Liner panels and facing layers.
7. 1″ side of 1⅝″ core panel must face shaft opening.

*Voids created to accommodate mechanical piping, wiring, etc. should be filled with mineral fiber insulation. As an alternate, furred construction may be used.

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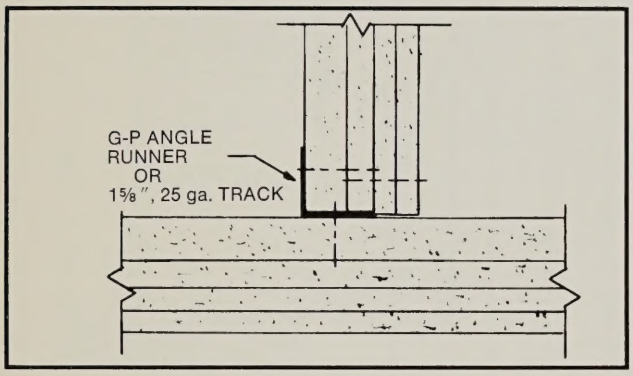
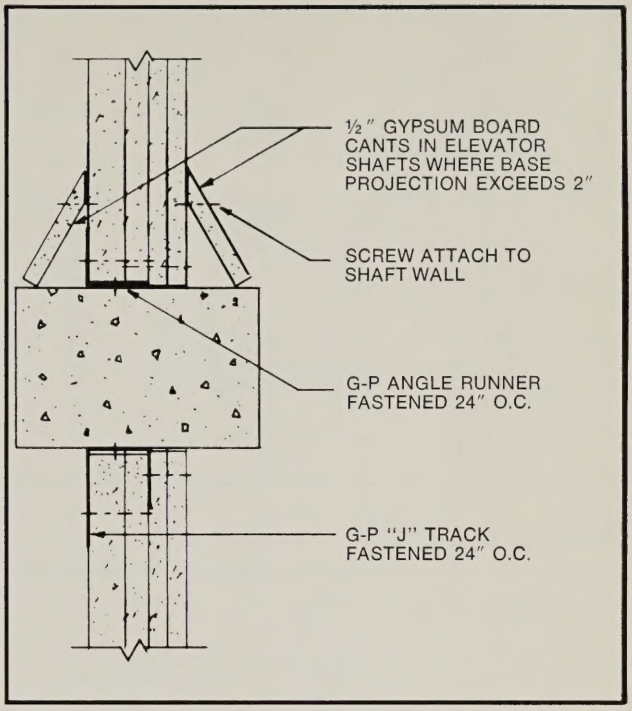
## DETAILS
## 2 HR. FIRE RATED WALL

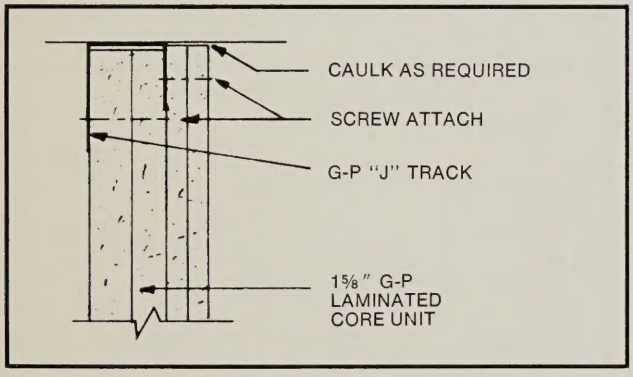
### Wall Intersection



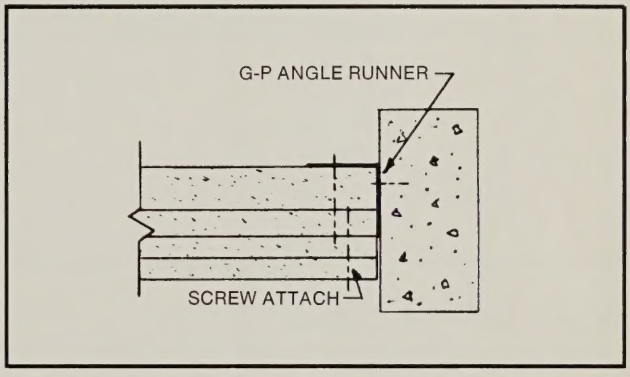

### Concrete Beam



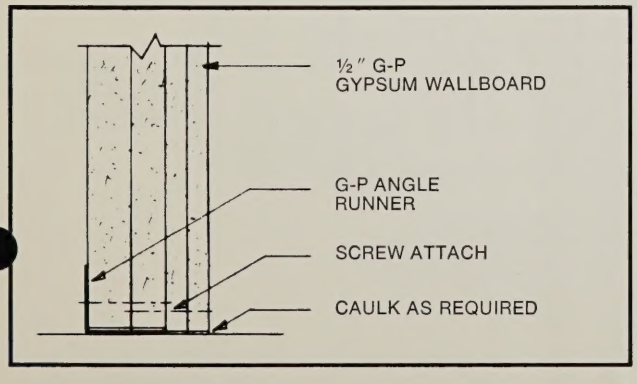

### Top



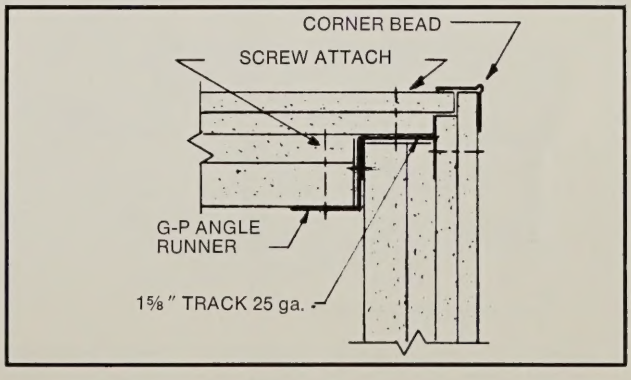

### End



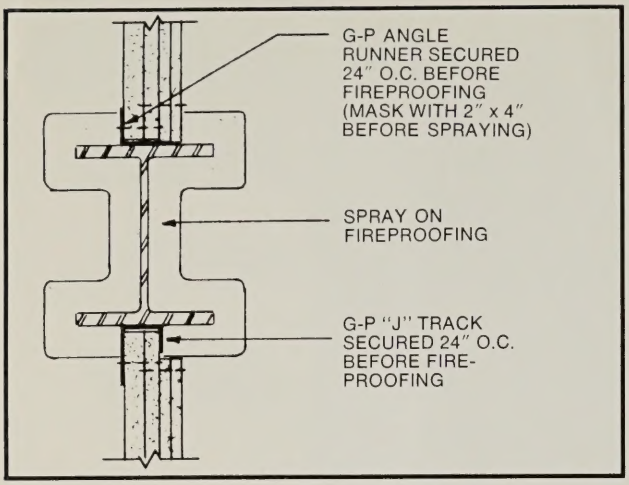

### Bottom



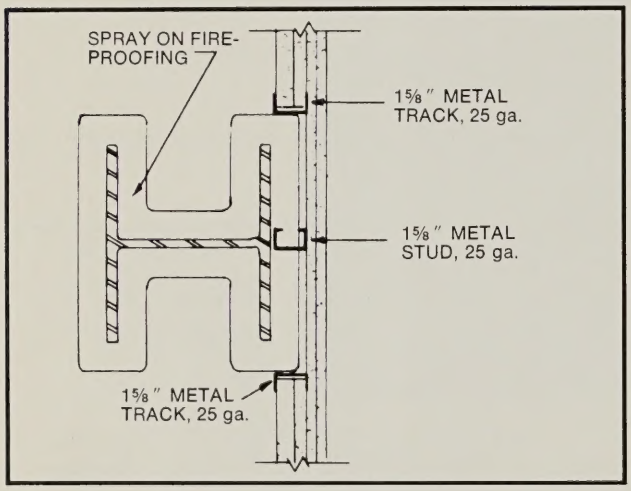

### Corner



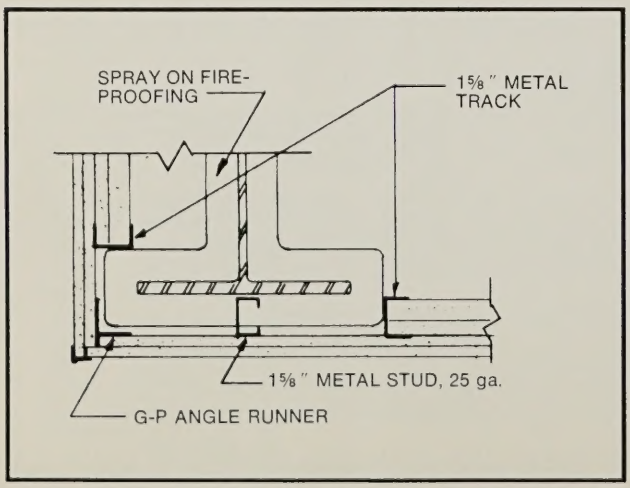
## Steel Beam


G-P ANGLE RUNNER SECURED 24" O.C. BEFORE FIREPROOFING (MASK WITH 2" x 4" BEFORE SPRAYING)
SPRAY ON FIREPROOFING
G-P "J" TRACK SECURED 24" O.C. BEFORE FIRE-PROOFING

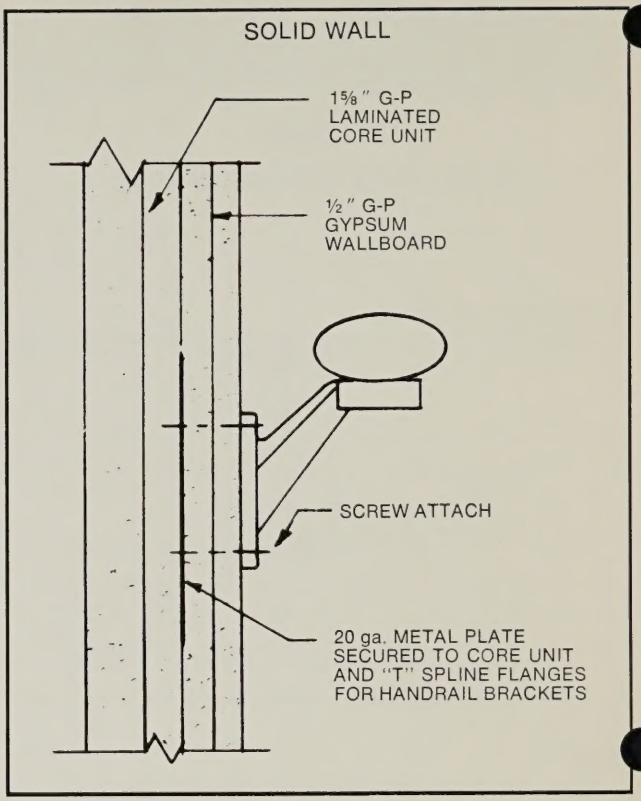
## Column Bypass

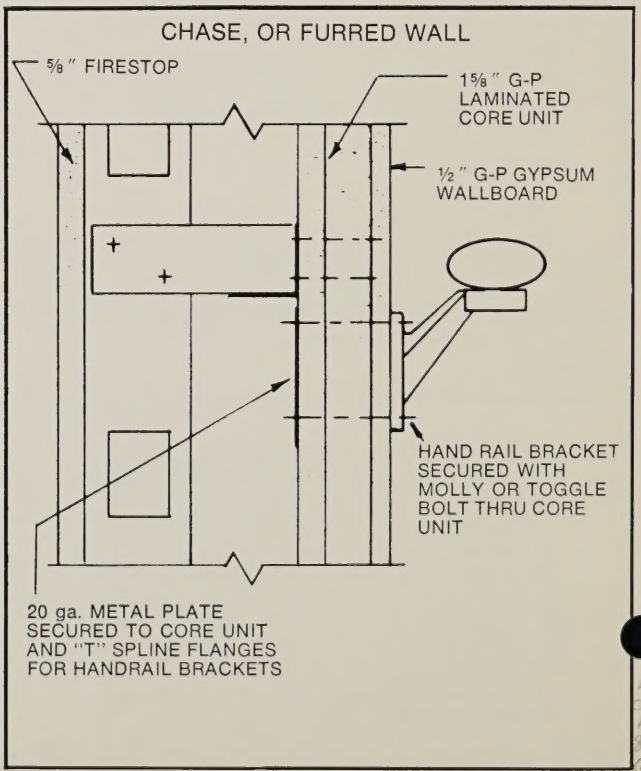



## Corner Column

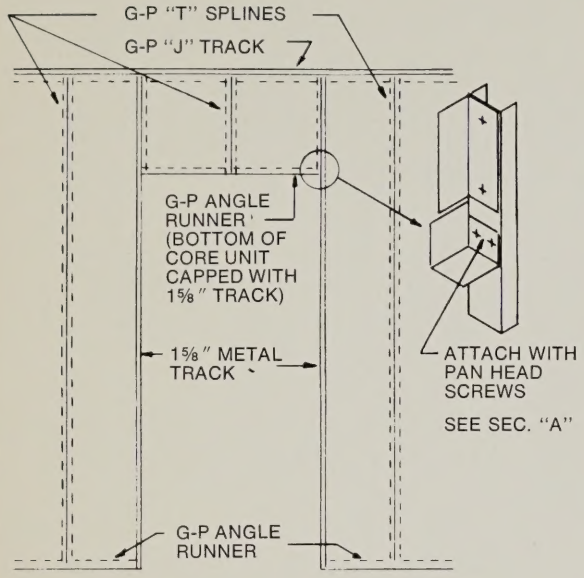



## Handrail Attachments

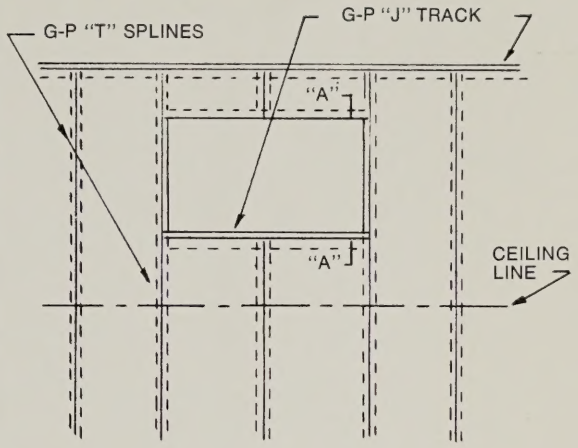

SOLID WALL
1⅝" G-P LAMINATED CORE UNIT
½" G-P GYPSUM WALLBOARD
SCREW ATTACH
20 ga. METAL PLATE SECURED TO CORE UNIT AND "T" SPLINE FLANGES FOR HANDRAIL BRACKETS


CHASE, OR FURRED WALL
⅝" FIRESTOP
1⅝" G-P LAMINATED CORE UNIT
½" G-P GYPSUM WALLBOARD
HAND RAIL BRACKET SECURED WITH MOLLY OR TOGGLE BOLT THRU CORE UNIT
20 ga. METAL PLATE SECURED TO CORE UNIT AND "T" SPLINE FLANGES FOR HANDRAIL BRACKETS

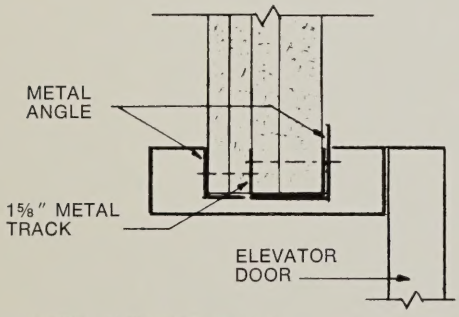
## Rough Door Opening


G-P "T" SPLINES
G-P "J" TRACK
G-P ANGLE RUNNER (BOTTOM OF CORE UNIT CAPPED WITH 1⅝" TRACK)
1⅝" METAL TRACK
ATTACH WITH PAN HEAD SCREWS
SEE SEC. "A"
G-P ANGLE RUNNER

## Duct Opening

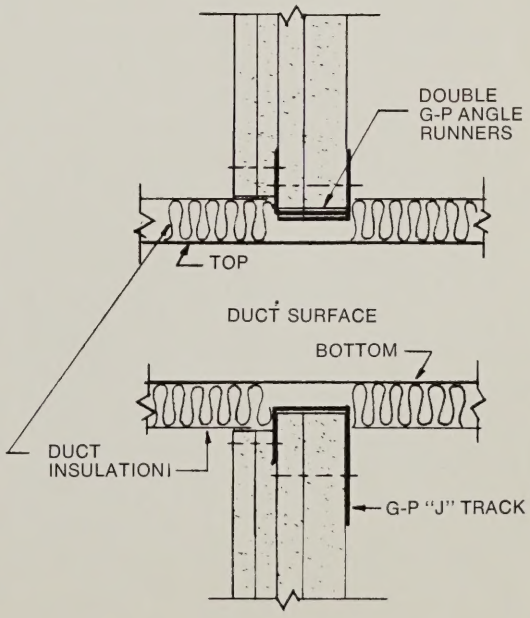



## Section "A" Elevator Door Head

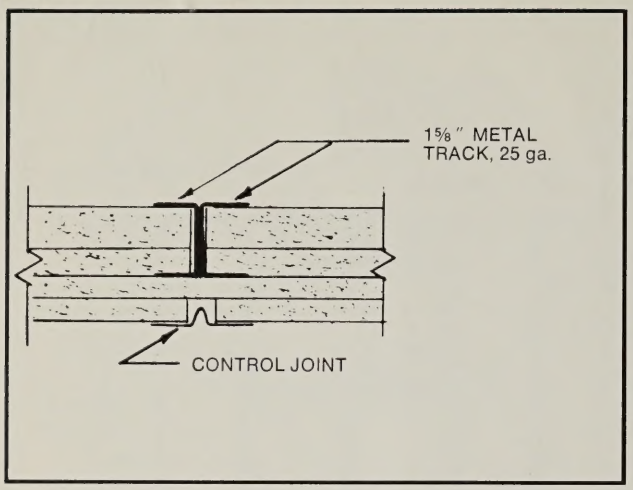



NOTE: ELEVATOR FRAME, DOORS, & OPERATING ACCESSORIES TO BE SUPPORTED SEPARATELY

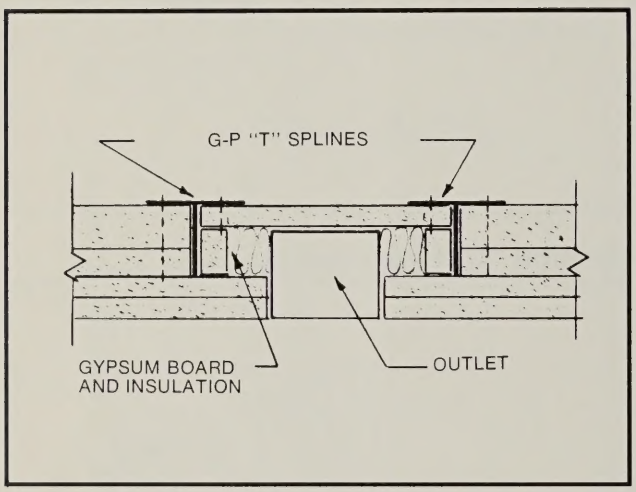
## Section "A-A" Duct Opening



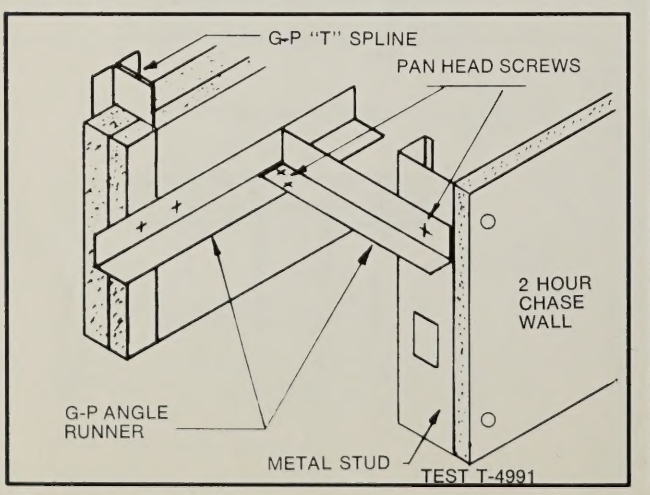
## Expansion Joint

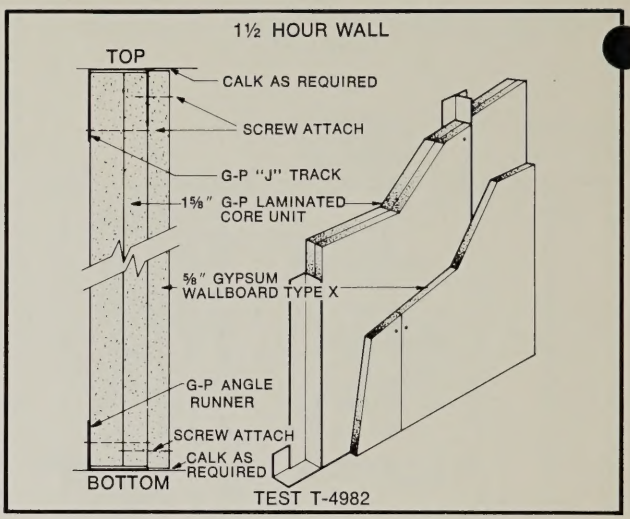
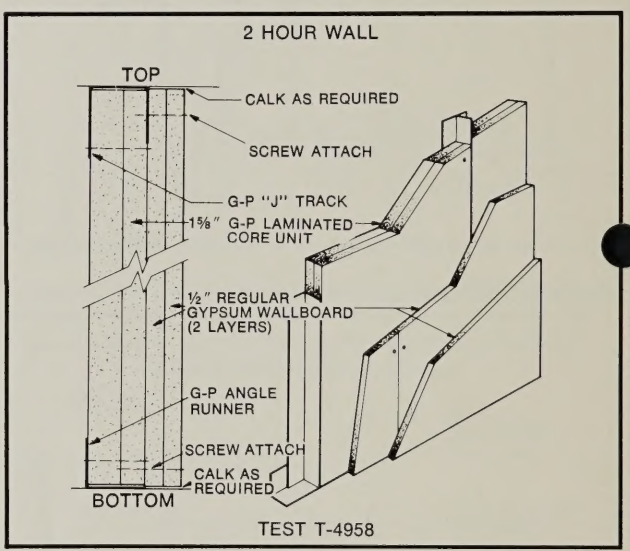
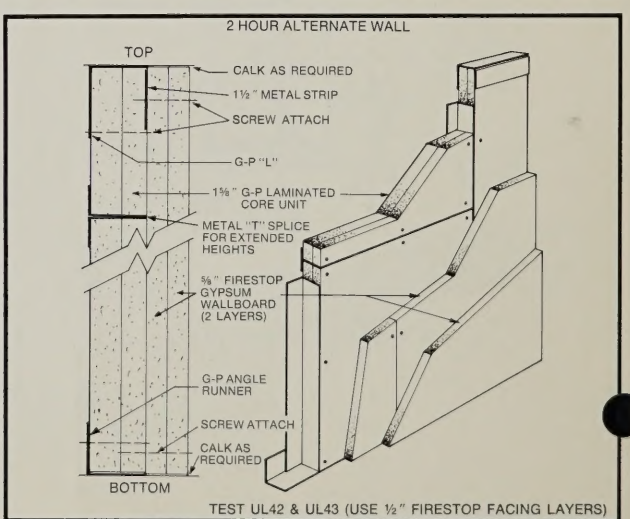



## Outlet Box




## Chase Wall




## Wall Assemblies